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Transport Properties of the γ -Al₂O₃/SrTiO₃ Heterostructure

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The 2-dimensional electron gas formed at the interface between LaAlO₃ and SrTiO₃ has attracted a lot of interest due to its fascinating electronic structure. Compared to semiconductors the electrons still suffer from a low carrier mobility. Substituting the deposited film with the spinel γ -Al₂O₃ resulted in a γ -Al₂O₃/SrTiO₃ heterostructure exhibiting a high electron mobility thus providing a big step towards applications and mesoscopic measurements. Understanding the electron transport is, however, still crucial. Here, we report an investigation of the transport properties of the γ -Al₂O₃/SrTiO₃ interface hereunder a study of anisotropy and carrier density tuning.